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ABSTRACT

Videotape recordings were compared with use of slides and an audiotape to determine whether the cost of videotape was justified for use with students in Appalachian high schools. Methods were compared on the basis of cognitive information retained by students, student receptivity to each of the two methods, and the cost of equipment. Two groups of female students were presented with information about the work and leisure activities of the nurse using the two identified methods. Findings included: (1) Girls who were presented the occupational information with slides and an audiotape achieved higher scores than a control group on a test of information retained, while the girls who viewed the videotape recording received scores lower than the control group, (2) The slide-audiotape and videotape groups did not differ significantly from each other, (3) The receptivity of the two methods appeared to slightly favor the slide-audiotape method, and (4) The cost of the equipment used slide-audiotape method was about one half that required for using videotape recordings. (JS)

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A Comparison of Two Methods Of Presenting Occupational Information

Technical Report No. 12

March, 1972

Division of Research and Evaluation
Appalachia Educational Laboratory, Inc.
Box 1348
Charleston, W.Va. 25325

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by

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Foreword

The mission of the Appalachia Educational Laboratory is to increase access to educational opportunities in the most efficient manner possible. As one small step in achieving this mission, two methods of presenting occupational information have been compared on the basis of effectiveness and cost to the user.

The purpose in completing the comparison was to determine which method was most appropriate for use with certain units of the Career Decision-Making Program of the Laboratory, and no claim is made that the results of the comparison are applicable to situations not similar to those described in this report.

The study was made possible through the excellent cooperation received by the Kanawha County School Board, and in particular, the staff of St. Albans (W.Va.) High School. Mr. Kenneth Whittington, principal, and Mrs. Sarah Ash, guidance counselor, were especially helpful in making arrangements for the sampling and testing required for the study.

Charles L. Bertram, Director
Division of Research and Evaluation

TABLE OF CONTENTS

Chapter 1

A COMPARISON OF TWO METHODS OF PRESENTING OCCUPATIONAL INFORMATION 1
Introduction 1
Procedure 1
Results 2
Analysis of Test Data 2
Receptivity of the Two Methods 2
Equipment Cost Comparison 3
Summary and Conclusion 3
Implication 4

List of Tables

Table

1 Mean Scores, Standard Deviations and Sample Sizes for the Test of Nursing Information by Treatment Group 4

2 Analysis of Variance Summary Table for Scores on the Test of Nursing Information by Treatment Group 4

3 Percent of Positive Student Responses to Questions About the Receptivity of the Two Methods of Presenting Occupational Information 5

4 Comparison of VTR and Slide-Audiotape Equipment 5

List of Attachments

Attachment

1 Test of Information About Nursing 7

2 Student's Reaction to the Nursing VTR 13

3 A Comparison of Test Items and Quotes From the Audio Portion of the Tape 17

A Comparison of Two Methods of Presenting Occupational Information

Introduction

A comparison of two methods of presenting occupational information to high school students has been completed as an evaluation activity of the Appalachia Educational Laboratory. One method was through the use of videotape recordings, and the second was a presentation of the same information through the use of slides and an audiotape. The two methods were compared on the basis of cognitive information retained by the students, the receptivity of each of the two methods, and the cost of equipment required for a school system to use each of the two methods.

During 1969 and 1970, 25 videotape recordings (VTRs) were produced by the Laboratory. The VTRs were viewed by approximately 2,000 high school students in Kentucky and Tennessee. Responses to questionnaires indicated that the tapes were well received by the students and seemed to be an excellent procedure for presenting occupational information. However, the cost of videotape equipment and materials appeared to be prohibitive to many Appalachian schools. Since the slide-audiotape method was less expensive for the Laboratory to produce and appeared to be less costly for the schools to use, a comparison of the two methods of information presentation was completed. The comparison focused primarily on the amount of information about nursing gained by the students for each method and their receptivity to the two methods.

Procedure

The 30-minute videotape illustrating the work and leisure activities of the nurse was selected for the comparison on the basis of technical adequacy and receptivity by students. A series of slides was made to illustrate the same information, and an audiotape was made for the audio track of the VTR. The audiotape was keyed so that the slides would be changed at the proper time. Therefore, one group of students could observe the VTR presentation while another group was receiving identical information by the slide-audiotape method.

A multiple-choice instrument was designed to measure the amount of information retained by students using either method of presentation (Attachment 1). A copy of the test items shown beside quotes from the script is presented as Attachment 3 so the reader may assess the face validity of the instrument. The Spearman Brown split half reliability estimate for the instrument was .63, which indicated that the test was consistently measuring similar content.

For the testing, 129 senior high school girls were assigned randomly to three treatment groups. A group of 37 girls watched and listened to the VTR while another group of 34 girls observed the slides and listened to an identical audiotape. The third group of 38 girls, which acted as a control, completed the test of knowledge about nursing without participating in either presentation. The students in the first two groups also were requested to complete a questionnaire designed to assess student reaction to the information about nursing and to the method of presentation (Attachment 2). The cost information was obtained from available catalogues.

Results

Following are the results of the analysis of test data, a comparison of responses to the questionnaire, and a comparison of the cost of equipment required for the two methods of presenting information.

Analysis of Test Data

The mean scores achieved by the different groups of students on the test of knowledge about nursing are shown in Table 1. The 19 items on the instrument each were assigned one point, and the order of means from highest to lowest was slide-audiotape, VTR, and control. However, the difference in means was only 1.71 points and the control group was able to answer 64.3 percent of the items correctly.

A one-way analysis of variance indicated that certain differences among means were significant (Table 2) and, according to a Dunnett's mean separation technique, the slide-audiotape group achieved higher mean scores than did the control group. The VTR group, however, did not achieve a higher mean score than the control group to a statistically significant degree.

Receptivity of the Two Methods

The questionnaire requested that the students answer the following questions:

- Did you view the entire program?
- Was the program easy to follow?
- Did the program contain all the information you wanted?

- If it did not, what further information would you like to see?
- In what way was the program helpful?
- What parts of the program were most interesting and least interesting?

As can be seen in Table 3, the responses to the questionnaire were somewhat in favor of the slide-audiotape treatment group. As for Question 1. 87 percent of the students in the VTR group and 100 percent of the students in the slide-audiotape group said they viewed the entire program. The program was reported to be easy to follow by 75 percent of the VTR group and 93 percent of the slide-audiotape group, and to contain all the information needed by 69 percent of the VTR group and 77 percent of the slide-audiotape group. The questions concerning additional information, helpfulness of the presentation, and interesting parts of the program provided little information which discriminated between the two methods.

One difference in subjective responses was that the students who were presented the VTR thought too much time was spent in following the nurse through the hospital and through other sections of various buildings. This problem was not mentioned by the students who were presented the information through the use of slides and an audiotape.

Equipment Cost Comparison

Table 4 is a comparison of approximate costs of the equipment used in the presentation of videotape and slide-tape programs. Although the cost varied according to type and purpose for which it was intended, the VTR equipment was found to cost at least twice as much as audiotape and slide equipment.

Summary and Conclusion

The VTR and slide-audiotape methods of presenting specific information about nursing were compared. Girls who were presented the occupational information with slides and an audiotape achieved higher scores than a control group on a test of information retained, while the girls who viewed the VTR did not achieve higher scores than the control group. However, the slide-audiotape and VTR groups did not differ significantly from each other. Although statistical comparisons were not made, the receptivity of the two methods appeared to slightly favor the slide-audiotape method, and the cost of the equipment used with slide-audiotape method was about one half that required for using VTRs.

Although statistically significant differences were obtained from the 19-item instrument measuring student learning, the educational significance of the comparison is somewhat weakened by the fact that the slide-audiotape group achieved a mean which was only 1.71 points higher than the control group. Since the control group was able to complete 64.3 percent of the items correctly, either the students already were aware of much of the

information contained in the tapes or the multiple-choice instrument was constructed in such a manner that more intelligent students could guess the correct answers.

Implication

On the basis of the use made of the videotape recording and slide-audiotape methods of presenting information by the Laboratory, the slide-audiotape method is more cost effective. The user's cost is about one half for the slide-audiotape method.

Cognitive learning was shown to be about the same for both methods, and subjective responses revealed somewhat greater student satisfaction with the slide-audiotape method.

Table 1

Mean Scores, Standard Deviations and Sample Sizes
for the Test of Nursing Information
by Treatment Group

	VTR	Slide-Tape	Control
$\bar{X}$	13.21	13.76	12.05
SD	3.09	2.60	2.50
N	37	34	38

Table 2

Analysis of Variance Summary Table for Scores
on the Test of Nursing Information
by Treatment Group

Source	d.f.	ss	M.S.	F	p
Between	2	55.60	27.84	3.57	<.05
Within	106	82.62	7.79		
Total	108	88.19			

(4)

Table 3

Percent of Positive Student Responses to Questions About the Receptivity of the Two Methods of Presenting Occupational Information

Question	VTR	Slide-Tape
Did you view the entire program?	87%	100%
Was the program easy to follow?	75%	93%
Did the program contain all the information you wanted?	69%	77%

Table 4

Comparison of VTR and Slide-Audiotape Equipment

VTR			Slide-Tape	
Video Recorder	Approximately	$1,000.00*	Tape Recorder	$200.00*
Portable Monitor 8"	"	200.00*	Slide Projector	169.50*
Tape Reel 1/2"		21.95*	Screen	140.00*
Total		$1,221.95		$509.50

*Prices of equipment are estimated from price lists issued by the Sony Corporation of America and the Eastman Kodak Company.

(5)

Attachment J

6/7

Test of Information About Nursing

DIRECTIONS

Dear Student,

The following questionnaire consists of a number of statements about the nursing profession. Using information which you already have, please fill in the correct space on the answer sheet provided. Give only one answer to each item.

Please make sure that the number of the item on the questionnaire corresponds with the number of the item on the answer sheet. An example follows:

Example:

1. George Washington's first name was
   (1) Harold
   (2) John
   (3) George
   (4) Fred
   (5) None of these

Answer	1	2	3	4	5
1	---	---	---	---	---
	---	---	---	---	---

If you do not know the correct answer, please do not guess. Thank you for your cooperation.

1. Obtaining a nursing degree while attending college:

   (1) is considered the "new way" to train nurses.
   (2) is not as efficient as learning the profession in a hospital.
   (3) is generally less rewarding for the student nurse.
   (4) is believed to be too distracting to the student nurse.
   (5) none of these.

2. Starting salaries for nurses:

   (1) begin at about $300 a month.
   (2) begin at about $400 a month.
   (3) begin at about $500 a month.
   (4) begin at about $700 a month.
   (5) none of these.

8/(9)

3. When a nurse needs to make decisions about a patient she should:

(1) know where to go to get help in making up her mind.
(2) be calm enough to make these decisions.
(3) depend on her intuition and emotions.
(4) ask the patient for his opinion on her decision.
(5) none of these.

4. One of the most important aspects of nursing is that:

(1) it does not require much time or energy.
(2) it is a job that does not require much self-understanding.
(3) it often allows a nurse to work alone and unsupervised.
(4) a nurse must give a lot of herself in order to meet the patient's needs.
(5) none of these.

5. The individual who supervises preparation of food in a hospital is the:

(1) cook.
(2) chef.
(3) nutritionist.
(4) dietitian.
(5) none of these.

6. Of the nurses needed throughout the country:

(1) very few are hospital nurses.
(2) only about one fourth are hospital nurses.
(3) two thirds are hospital nurses.
(4) almost all are hospital nurses.
(5) none of these.

7. Today there is a need for:

(1) 10,000 professional nurses.
(2) more than 100,000 professional nurses.
(3) more than 750,000 professional nurses.
(4) more than 1,000,000 professional nurses.
(5) none of these.

8. Almost all the work a nurse does:

(1) is unsupervised.
(2) is closely supervised.
(3) is unimportant.
(4) involves making a diagnosis.
(5) none of these.

9. According to the material on nursing presented to you:

(1) marriage greatly interferes with a career in nursing.
(2) marriage is not necessarily a barrier to a nursing career.
(3) marriage makes a nurse less efficient in the hospital routine.
(4) marriage enhances a nurses's career greatly.
(5) none of these.

10. According to the material on nursing which you have seen, a nurse's first duty in an emergency room is:

(1) to make a diagnosis of the medical problem.
(2) to prescribe treatment and recommend future prevention.
(3) to gather vital information and relay this to the doctor.
(4) to administer first aid.
(5) none of these.

11. A student nurse's experience in the hospital can be considered:

(1) a way to earn money while she is in school.
(2) a way to get to know hospital personnel.
(3) a laboratory where a student can utilize what she has learned.
(4) a time to practice where mistakes don't really count.
(5) none of these.

12. One may become a registered nurse by:

(1) completing one year as a candy striper after graduating from high school.
(2) finishing a two-year college degree program in nursing.
(3) completing a three-year liberal arts program in college, with a minor in nursing.
(4) studying at home for six months and then taking a written test in nursing.
(5) none of these.

13. It is necessary that a nurse be an understanding person so that she:

(1) will be confident in her decisions.
(2) will be able to care for people.
(3) will be sensitive to the needs of patients.
(4) both (2) and (3).
(5) none of these.

14. The individual who dispenses drugs and medicine to patients is the:

(1) X-ray technician.
(2) podiatrist.
(3) pharmacist.
(4) gynecologist.
(5) none of these.

15. The individual who operates X-ray equipment:

(1) is an X-ray technician.
(2) must be a medical doctor.
(3) is often a nurse.
(4) is not a member of the medical team.
(5) none of these.

16. The main function of laboratory tests in a hospital is to:

(1) help doctors publish articles in professional journals.
(2) aid in the detection and diagnosis of disease.
(3) provide blood tests for obtaining a marriage license.
(4) determine the quality of drugs available in the hospital.
(5) none of these.

17. A hospital laboratory technician should:

(1) be able to advise the doctor on the proper treatment for the patient.
(2) be interested in science and technology.
(3) be a capable administrator.
(4) have the ability to write long technical reports.
(5) none of these.

18. The individual whose primary duty in the hospital is to help treat persons with muscle, bone or joint disease is the:

(1) nurse.
(2) surgeon.
(3) orderly.
(4) physical therapist.
(5) none of these.

19. Being a candy striper:

(1) gives the student nurse an opportunity to practice what she learned in college.
(2) gives a girl an opportunity to see if nursing might interest her.
(3) gives teenage girls a chance to treat patients directly.
(4) provides a post graduate course in nursing.
(5) none of these.

Attachment 2

Attachment 2

Student's Reaction to the Nursing VTR

Sex: M ___ F ___

1. Did you view the entire tape program?
(Please check one)

Yes____ No____

2. Did you find the program easy to follow?
(Please check one)

Yes____ No____

3a. Did the program contain all the information that you wanted?
(Please check one)

Yes____ No____

3b. If NO, what other information would you like to see? _____

_____

_____

4. In what ways did you find the information in the program helpful?

_____

_____

_____

5. What parts of the program did you find most interesting?

_____

_____

_____

_____

6. What part of the program did you find least interesting?

_____

_____

_____

Attachment 3

16/17

A Comparison of Test Items and
Quotes From the Audio Portion of
the Tape

Quotes from the Script	Test Questions
She graduates with a two-year college degree in nursing.	12. One may become a registered nurse by: (1) completing one year as a candy striper after graduating from high school. (2) finishing a two-year college degree program in nursing. (3) completing a three-year liberal arts program in college, with a minor in nursing. (4) studying at home for six months and then taking a written test in nursing. (5) none of these.
The hospital experience is considered a laboratory.	11. A student nurse's experience in the hospital can be considered: (1) a way to earn money while she is in school. (2) a way to get to know hospital personnel. (3) a laboratory where a student can utilize what she has learned. (4) a time to practice where mistakes don't really count. (5) none of these.
In an emergency room situation, the nurse comforts a patient as much as possible until a doctor arrives.	10. According to the material on nursing which you have seen, a nurse's first duty in an emergency room is: (1) to make a diagnosis of the medical problem. (2) to prescribe treatment and recommend future prevention. (3) to gather vital information and relay this to the doctor. (4) to administer first aid. (5) none of these.

Quotes from the Script

I think a nurse should be above all understanding... she needs to care for people.

She needs to remain calm... to make decisions.

A nurse can raise a family and put her child care skills to work...she can (later) return to a good paying job.

...you have to give of yourself a lot...to meet the patient's needs.

(20)

Test Questions

13. It is necessary that a nurse be an understanding person so that she:

    (1) will be confident in her decisions.
    (2) will be able to care for people.
    (3) will be sensitive to the needs of patients.
    (4) both (2) and (3).
    (5) none of these.

3. When a nurse needs to make decisions about a patient she should:

    (1) know where to go to get help in making up her mind.
    (2) be calm enough to make these decisions
    (3) depend on her intuition and emotions.
    (4) ask the patient for his opinion on her decision.
    (5) none of these.

9. According to the material on nursing presented to you:

    (1) marriage greatly interferes with a career in nursing.
    (2) marriage is not necessarily a barrier to a nursing career.
    (3) marriage makes a nurse less efficient in the hospital routine.
    (4) marriage enhances a nurse's career greatly.
    (5) none of these.

4. One of the most important aspects of nursing is that:

    (1) it does not require much time or energy.
    (2) it is a job that does not require much self-understanding.
    (3) it often allows a nurse to work alone and unsupervised.
    (4) a nurse must give a lot of herself in order to meet the patient's needs.
    (5) none of these.

Quotes from the Script	Test Questions
If you want to help people... you'll enjoy this career.	
Nancy works under close supervision, constantly.	8. Almost all the work a nurse does: (1) is unsupervised. (2) is closely supervised. (3) is unimportant. (4) involves making a diagnosis. (5) none of these.
...130,000 (professional nurses) are needed today.	7. Today there is a need for: (1) 10,000 professional nurses. (2) more than 100,000 professional nurses. (3) more than 750,000 professional nurses. (4) more than 1,000,000 professional nurses. (5) none of these.
...two thirds of the professional nurses needed are hospital nurses.	6. Of the nurses needed throughout the country: (1) very few are hospital nurses. (2) only about one fourth are hospital nurses. (3) two thirds are hospital nurses. (4) almost all are hospital nurses. (5) none of these.
Everyone who works in a hospital is a member of the medical team.	
The dietitians select foods... plan menus, and supervise... fixing the meals.	5. The individual who supervises preparation of food in a hospital is the: (1) cook. (2) chef. (3) nutritionist. (4) dietitian. (5) none of these.
The pharmacist...(provides) drugs and medicine.	14. The individual who dispenses drugs and medicine to patients is the: (1) X-ray technician. (2) podiatrist. (3) pharmacist. (4) gynecologist. (5) none of these.

Quotes from the Script	Test Questions
X-ray technicians operate X-ray equipment.	15. The individual who operates X-ray equipment: (1) is an X-ray technician. (2) must be a medical doctor. (3) is often a nurse. (4) is not a member of the medical team. (5) none of these.
Lab tests play an important part in the detection... diagnosis and treatment of disease.	16. The main function of laboratory tests in a hospital is to: (1) help doctors publish articles in professional journals. (2) aid in the detection and diagnosis of disease. (3) provide blood tests for obtaining a marriage license. (4) determine the quality of drugs available in the hospital. (5) none of these.
To work in a lab you should have an interest in science.	17. A hospital laboratory technician should: (1) be able to advise the doctor on the proper treatment for the patient. (2) be interested in science and technology. (3) be a capable administrator. (4) have the ability to write long technical reports. (5) none of these.
The person responsible for the total operation of the hospital is the hospital administrator.	
Physical therapists help people with muscle, bone, or joint diseases...to overcome their disabilities.	13. The individual whose primary duty in the hospital is to help treat persons with muscle, bone, or joint disease is the: (1) nurse. (2) surgeon. (3) orderly. (4) physical therapist. (5) none of these.

Quotes from the Script	Test Questions
Being a candy striper gives a girl the chance to see if nursing is what might interest her.	19. Being a candy striper: (1) gives the student nurse an opportunity to practice what she learned in college. (2) gives a girl an opportunity to see if nursing might interest her. (3) gives teenage girls a chance to treat patients directly. (4) provides a post graduate course in nursing. (5) none of these.
...college life is important and an advantage over the old way of training nurses at a hospital.	1. Obtaining a nursing degree while attending college: (1) is considered the "new way" to train nurses. (2) is not as efficient as learning the profession in a hospital. (3) is generally less rewarding for the student nurse. (4) is believed to be too distracting to the student nurse. (5) none of these.
Most nurses start at $500-$600 a month.	2. Starting salaries for nurses: (1) begin at about $300 a month. (2) begin at about $400 a month. (3) begin at about $500 a month. (4) begin at about $700 a month. (5) none of these.